

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>S3225 GC/1ko</b>	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416
International application No. <b>PCT/EP2004/008277</b>	International filing date (day/month/year) <b>23.07.2004</b>	Priority date (day/month/year) <b>30.07.2003</b>
International Patent Classification (IPC) or national classification and IPC <b>H04L27/26</b>		
Applicant <b>INFINEON TECHNOLOGIES AG</b>		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <b>8</b> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <b>2</b> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>	
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>	

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/008277

Box No. I

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-16 \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. \_\_\_\_\_ as originally filed/furnished
- nos.\* 1-7 \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/10-10/10 \_\_\_\_\_ as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims <u>1-7</u>	YES
	Claims _____	NO
Inventive step (IS)	Claims _____	YES
	Claims <u>1-7</u>	NO
Industrial applicability (IA)	Claims <u>1-7</u>	YES
	Claims _____	NO

## 2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: US 2003/128751 A1 (VANDENAMEELE-LEPLA  
PATRICK) 10 July 2003 (2003-07-10)

D2: US-B-6 317 4701 (KROEGER BRIAN WILLIAM ET AL)  
13 November 2001 (2001-11-13).

## 1. Clarity

Claim 1 fails to satisfy all the requirements of PCT Article 6 because the subject matter for which protection is claimed is not clearly defined. Said claim attempts to define the subject matter in terms of the result to be achieved ("the weighting circuit weights the carrier signals in such a way that the energy of the noise signal is the same in all the weighted carrier signals") but in so doing merely states the problem to be solved without giving the technical features that are necessary for achieving this result.

It is unclear whether the feature that the weighting coefficient sets are selected as a

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Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

function of a predicted level of noise signal energy in the received signal is the technical feature that is necessary for achieving the result according to claim 1 (cf. the description, page 4, lines 24-31: the weighting coefficients must represent reliability data and the greater the noise in a carrier signal, the less the associated weighting coefficient).

2. The present application fails to meet the requirements of PCT Article 33(1) because the subject matter of claim 1 does not involve an inventive step (PCT Article 33(3)).

Document D1 is considered to be the prior art closest to the subject matter of claim 1. Said document discloses (the references in parentheses are to D1):

a weighting circuit for a receiver that is provided for receiving a multi-carrier signal made up of carrier signals (see D1, paragraph 13), said weighting circuit comprising the technical feature ("the weighting circuit weights the carrier signals in such a way that the energy of the noise signal is the-same in all the weighted carrier signals") that is necessary for achieving the result according to claim 1 (see D1, paragraph 13: "greater weights are given to carriers whose frequencies include lower noise and/or carriers

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transmitting a known sequence of symbols" and paragraph 21: "carrier specific weighting factors may be inversely proportional to a noise power associated with the associated carrier").

The subject matter of claim 1 therefore differs from the known circuit in that:

the weighting circuit has a memory, which stores multiple weighting coefficient sets, and a selector which selects one of the weighting coefficient sets stored in the memory as a function of the predicted level of noise signal energy in the received signal.

(The feature "an estimator being used to calculate a predicted level of noise signal energy from the cross-correlations between the received signal and a predicted noise signal which is phase-shifted by 90°" has been disregarded, see Box I above).

The problem addressed by the present invention can consequently be regarded as that of achieving an effective selection of the weighting coefficients.

The solution to the above problem, as proposed in claim 1 of the present application, cannot be considered inventive (PCT Article 33(3)). The reasons are the following: D1 discloses that "carrier specific weighting factors may be

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inversely proportional to a noise power associated with the associated carrier". Thus, the use of a memory and of a selection based on a predicted level of noise signal energy concerns only one of a number of obvious possibilities from which a person skilled in the art would choose in order to solve the problem of interest, without thereby being inventive.

3. The same reasoning applies if document D2 is considered to be the prior art closest to the subject matter of claim 1 (document D2 also discloses the features of document D1, as cited in point 2. above - see D2, column 6, lines 6-9 and lines 30-35: the weighting coefficients are inversely proportional to the noise in each carrier).

Thus, if the subject matter of document D2 is considered to be the closest prior art, the subject matter of claim 1 does not involve an inventive step.

4. Claims 2-7 contain no features which, combined with the features of any claim to which they refer, meet the PCT requirements for inventive step (see documents D1 and D2 and the associated passages cited in the search report).

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

**Box I: Basis of the report**

- I. The amendments submitted to the International Bureau in accordance with PCT Article 19(1) introduce substantive matter which, contrary to PCT Article 19(2), goes beyond the disclosure in the international application as filed. The amendments are as follows:

The applicant has inserted the following feature into claim 1:

"an estimator being used to calculate the predicted level of noise signal energy from the cross-correlations between the received signal and a predicted noise signal which is phase-shifted by 90°".

However, the description and the drawing (see page 11, line 16 to page 12, line 5 and figure 5) convey the impression that this feature does not suffice for solving the technical problem addressed by the invention since the estimator unit also requires a second cross-correlation value, namely the cross-correlation between the received signal and a predicted noise signal for calculating the level of noise signal energy.

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## Supplemental Box

In consequence, this generalisation in claim 1 introduces substantive matter which, contrary to PCT Article 19(2), goes beyond the disclosure in the international application as filed.

Since claims 2-7 are dependent on claim 1, these claims, too, fail to satisfy the requirements of PCT Article 19(2).

**Therefore, for the purpose of examining the patentability of claims 1-7, the aforementioned feature has been disregarded in this report.**